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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,217	10/21/2003	George G. Barclay	51821	2341

53884 7590 04/06/2007

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EXAMINER	
LEE, SIN J	
ART UNIT	**PAPER NUMBER**
1752	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/690,217	BARCLAY ET AL.	
	Examiner	Art Unit	
	Sin J. Lee	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5,12,15-17,20,21,30,37-42 and 60-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5,12,15-17,20,21,30,37-42,60,61 and 63* is/are rejected.

7)☒ Claim(s) *62, 64* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the amendment, previous 103(a) rejection over Takemura et al'126 is hereby withdrawn.

2. Claims 2-4, 6-~~10~~ 11, 13, 14, 18, 19, 22-29, 31-36 and 43-59 are canceled claims.

3. Previously indicated allowability of previous claim 10 is hereby withdrawn for the reasons explained in Paragraph 5 below (Barclay '676 teaches present fluorinated alcohol moiety). The Examiner sincerely apologizes for this.

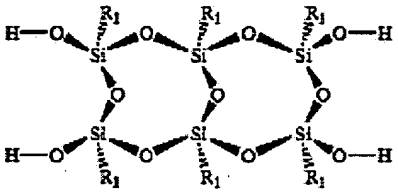
Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 5, 16, 17, 20, 21, 30, 37-42, 60, 61 and 63 are rejected under 35 U.S.C. 102(e) as being anticipated by Barclay et al (US 2003/0219676 A1)

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

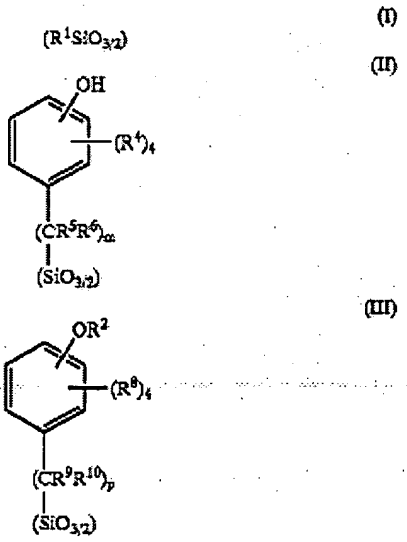
Barclay shows a scheme (Scheme II) which depicts a preferred polymerization method for making his siloxane polymer (which is to be used a photoresist resin component) (see [0009] and [0032]). In that scheme, the final product is ladder-like silsesquioxane shown below.



Ladder-like silsesquioxane

In this structure, the ratio of silanol groups to Si atoms is about 0.7.

Furthermore, Barclay teaches ([0045] and [0049] as well as [0054]) that a preferred polymer for his invention includes one or more repeating unit of formula I, one or more repeating unit of formula II, and one or more repeating unit of formula III, which are shown below



(I)

(II)

(III)

In this polymer, R^1, which examples are shown in [0046], is neither photoacid-labile group nor aqueous base-solubilizing group. The –OH group in the formula (II) is an aqueous base-solubilizing group. Also, Barclay teaches the R^4 group in the formula (II) to be R^7 or –OH in which R^7 is $-C(CF_3)_2OH$ (see [0047] and the last two lines of [0048]).

Based on this teaching, one skilled in the art would immediately envisage R^4 of formula (II) to be $-C(CF_3)_2OH$ (present fluorinated alcohol group). The R^2 group in formula (III) is an acid labile group (see [0055]). Barclay also teaches the use of a photoacid generator together with his polymer to form a positive photoimageable composition (see [0060] and [0015]). Therefore, the prior art teaches present inventions of claims 1, 5, 16, 17, 20, 21, 61 and 63.

Barclay uses his photoimageable composition in a top layer in a bilayer photoresist system (see [0087]-[0090]). In such a system, a bottom layer of a conventional photoresist, such as novolac polymer based resist, is applied to a substrate (such as a silicon wafer – see [0113]). After forming the top layer made of his photoimageable composition, Barclay carries out an exposure step using exposure wavelengths, such as 248, 193, and 157 nm. Following exposure, the top layer film is developed to form an etch pattern. Therefore, the prior art teaches present inventions of claims 30, 37-42 and 60.

Claim Rejections - 35 USC § 103

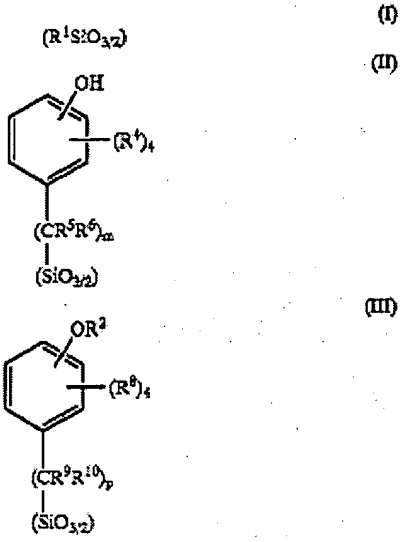
6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being obvious over Barclay et al (US 2003/0219676 A1).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome

by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

As discussed above in Paragraph 5, Barclay teaches that a preferred polymer for his invention includes one or more repeating unit of formula I, one or more repeating unit of formula II, and one or more repeating unit of formula III, which are shown below



Furthermore in [0057], Barclay states the following:

> **[0057]** In general, the monomers of formulae I-III may be polymerized in any ratio to provide the polymers of the present invention. For example, monomers of formulae I and II may be used in any ratio of 1:11 from 99:1 to 1:99. Monomers of formulae I and III may be used in any ratio from of 1:111 from 99:1 to 1:99. When the present polymers are used in positive-acting photoimageable compositions, it is preferred that the monomers of formula III are present from 5 to 80%, based on the total molar percent of the monomers used.

Based on this teaching, it would have been obvious to one skilled in the art to have the repeating unit (III) in the amount of 5% (because "5" is clearly included as the lower end of the taught range), which gives 95% for the sum of (I) and (II). Also, since Barclay teaches that the monomer units of formulae I and II can be used in the ratio of 1:99, it would have been obvious to one skilled in the art to have the ratio of the repeating unit (I) to the repeating unit (II) (the sum of repeating units (I) and (II) being 95 mol%) to be 1:99 (which clearly gives at least 50 mol% for the repeating unit (II)) with a reasonable

expectation of obtaining a highly resolved relief image. Thus, Barclay's teaching renders obvious present inventions of claims 12 and 15.

Allowable Subject Matter

8. Claims 62 and 64 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Barclay does not teach or suggest present ratio of silanol groups to Si atoms as claimed in present claim 62. Barclay does not teach or suggest present moiety of sulfonamide or thiol as claimed in present claim 64.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Lee
March 31, 2007

SIN LEE
PRIMARY EXAMINER